WHAT IS CLAIMED IS:

1. A fermentation apparatus comprising:

(a) a container frame configured to contain a plurality of sample vessels; and,

(b) a gas distribution arrangement that is configured to provide gas to a plurality of sample vessels when the sample vessels are positioned in the container frame.

2. The fermentation apparatus of claim **1**, wherein the gas distribution arrangement comprises a gas inlet configured to deliver gas to a plurality of cannulas, which cannulas are configured to provide gas to the sample vessels when the sample vessels are positioned in the container frame.

3. The fermentation apparatus of claim **1**, wherein the gas distribution arrangement comprises:

(a) a dispensing plate that comprises a top portion and a bottom portion, wherein the bottom portion and the top portion are joined together such that a hollow space exists between the top portion and the bottom portion;

(b) an array of sample vessel areas located in a bottom surface of the bottom portion, which sample vessel areas each comprise a recess and are positioned to correspond to an array of sample vessels;

(c) an array of cannulas that are in fluid communication with the hollow space and protrude from a bottom surface of the dispensing plate through the sample vessel areas; and

(d) a gas inlet in fluid communication with the hollow space for delivering gas into a plurality of sample vessels via the cannulas during fermentation.

4. The fermentation apparatus of claim **3**, wherein each of the cannulas comprises a plurality of passages.

5. The fermentation apparatus of claim **4**, wherein each of the cannulas comprises at least three passages.

6. The fermentation apparatus of claim **3**, wherein the gas distribution arrangement is configured to allow delivery of one or more reagent to the sample vessels.

7. The fermentation apparatus of claim **1**, wherein the container frame is configured to contain an array of sample vessels.

8. The fermentation apparatus of claim **7**, wherein the container frame is configured to contain an 8 by 12 array of sample vessels.

9. The fermentation apparatus of claim **7**, wherein the container frame is configured to contain at least 96 sample vessels.

10. The fermentation apparatus of claim **9**, wherein the container frame is configured to contain 96, 384, or 1536 sample vessels.

11. The fermentation apparatus of claim **1**, wherein the container frame is transportable.

12. The fermentation apparatus of claim **11**, wherein the container frame is configured for transport to a post-fermentation processing station.

13. The fermentation apparatus of claim **1**, wherein the container frame is configured for placement within a temperature controlled area, wherein a temperature controller is coupled to the container frame and/or to the plurality of sample vessels.

14. The fermentation apparatus of claim **13**, wherein the temperature controlled area comprises a water bath or a temperature controlled room.

15. The fermentation apparatus of claim **1**, wherein the container frame is autoclavable.

16. The fermentation apparatus of claim **1**, wherein the container frame and the gas distribution arrangement are autoclavable.

17. The fermentation apparatus of claim **1**, further comprising a plurality of sample vessels.

18. The fermentation apparatus of claim **17**, wherein each of the sample vessels has a volume of 50 to 100 ml.

19. The fermentation apparatus of claim **17**, wherein each sample vessel comprises a sample.

20. The fermentation apparatus of claim **19**, wherein each sample is 80 mls or less.

21. The fermentation apparatus of claim **19**, wherein the samples each have substantially the same composition.

22. The fermentation apparatus of claim **19**, wherein the samples each have a different composition.

23. The fermentation apparatus of claim **17**, wherein the sample vessels comprise glass, plastic, metal, polycarbonate, and/or ceramic.

24. The fermentation apparatus of claim **17**, wherein one or more of the sample vessels comprises a vent.

25. The fermentation apparatus of claim **17**, further comprising a sensor in contact with one or more of the samples in the sample vessels.

26. The fermentation apparatus of claim **1**, wherein the gas distribution arrangement comprises a gas source which gas source provides oxygen or a mixture of oxygen and at least one other gas to each sample vessel during operation of the apparatus.

27. The fermentation apparatus of claim **1**, further comprising a process controller operably coupled to the gas distribution arrangement.

28. The fermentation apparatus of claim **1**, further comprising a dispenser for dispensing one or more reagents into the plurality of sample vessels.

29. The fermentation apparatus of claim **28**, wherein the dispenser is configured to dispense the reagents into the plurality of sample vessels via a plurality of apertures that correspond to the sample vessels.

30. A fermentor head for multiple sample fermentation, the fermentor head comprising:

(a) a dispensing plate that comprises a top portion and a bottom portion, wherein the bottom portion and the top portion are joined together such that a hollow space exists between the top portion and the bottom portion;

(b) an array of sample vessel areas located in a bottom surface of the bottom portion, which sample vessel areas each comprise a recess and are positioned to correspond to an array of sample vessels;

(c) an array of cannulas that are in fluid communication with the hollow space and protrude from a bottom surface of the dispensing plate through the sample vessel areas; and

(e) a gas inlet in fluid communication with the hollow space for delivering gas into a plurality of sample vessels via the cannulas during fermentation.

31. The fermentor head of claim **30**, wherein the dispensing plate further comprises an array of apertures for accessing samples during fermentation.

32. The fermentor head of claim **30**, wherein the array of cannulas comprises an 8 by 12 array.

33. The fermentor head of claim **30**, wherein the array of cannulas comprises at least 96 cannulas.

34. The fermentor head of claim **33**, wherein the array of cannulas comprises 96, 384, or 1536 cannulas.

35. The fermentor head of claim **30**, wherein the cannulas extend 15 to 16 centimeters below the bottom surface of the first plate.

36. The fermentor head of claim **30**, wherein the sample vessels have a volume of 50 to 200 ml.

37. The fermentor head of claim **30**, wherein the sample vessels have a volume of 50 to 100 ml.

38. The fermentor head of claim **30**, wherein the cannulas deliver gas adjacent to a bottom of the sample vessels.

39. The fermentor head of claim **30**, wherein the gas inlet delivers oxygen or nitrogen into the interior space of the second plate, thereby providing oxygen or nitrogen to the sample vessels via the cannulas during fermentation.

40. The fermentor head of claim **30**, wherein each of the cannula comprises at least three passages.

41. The fermentor head of claim **30**, wherein the cannulas are adapted to deliver gas, deliver fluid, or aspirate fluid from the sample vessels during fermentation.

42. A method of fermenting a plurality of samples, the method comprising:

(a) providing a plurality of sample vessels in a container frame, wherein each of the sample vessels contains a sample;

(b) fermenting the samples in the plurality of sample vessels, which fermenting comprises simultaneously delivering gas to each of the sample vessels via a plurality of cannulas associated with the sample vessels.

43. The method of claim **42**, wherein each sample has a volume of less than 100 ml.

44. The method of claim **42**, further comprising pre-processing or post-processing the samples in the sample vessels.

45. The method of claim **44**, wherein the pre-processing or post-processing is performed in a different location than step (b).

46. The method according to claim **44**, wherein the pre-processing and/or post-processing are performed robotically.

47. The method according to claim **44**, wherein the pre-processing and/or post-processing comprises centrifugation, aspiration, or dispensing of one or more reagent.

48. The method of claim **42**, wherein delivering gas comprises delivering oxygen, air, and/or, nitrogen to the samples.

49. The method of claim **42**, wherein delivering gas comprises delivering air and oxygen to the samples over a period of time, during which period of time, the ratio of air to oxygen changes.

50. The method of claim **49**, wherein the ratio changes linearly over time or in a stepwise manner over time.

51. The method of claim **42**, further comprising configuring the sample vessels into a rectangular array, a honeycomb array, or a linear array within the container frame.

52. The method of claim **42**, further comprising transferring the sample vessels into a centrifuge rotor.

53. The method according to claim **42**, further comprising detecting one or more fermentation conditions with a sensor coupled to one or more sample vessels and adjusting the fermentation conditions in the sample vessels.

54. The method according to claim **53**, comprising detecting and adjusting at pre-determined time intervals.

55. The method according to claim **53**, wherein the adjusting the fermentation conditions comprises adding a feed solution to the sample vessels.

56. The method according to claim **53**, wherein the detecting comprises: measuring a pH of one of the samples; measuring a redox potential of one of the samples; measuring an optical density of one of the samples; and/or measuring a light emission from one of the samples.

57. The method of claim **42**, further comprising autoclaving the sample vessels in the container frame.

58. The method of claim **57**, further comprising autoclaving the plurality of cannulas simultaneously with the sample vessels in the container frame.

59. A method of fermenting a plurality of samples, the method comprising:

(a) positioning a plurality of sample vessels into a transportable container frame, which container frame maintains the sample vessels in an array;

(b) placing the plurality of samples into the plurality of sample vessels;

(c) attaching a fermentor head to the container frame, which fermentor head comprises an array of cannulas, wherein the array of cannulas corresponds to the array of sample vessels and is inserted into the sample vessels;

(d) fermenting the samples in the sample vessels, which fermenting comprising simultaneously delivering a gas to the samples via the array of cannulas.

60. The method of claim **59**, wherein step (c) is performed prior to step (b).

61. The method of claim **59**, wherein step (b) is performed prior to step (a).

62. The method of claim **59**, wherein delivering a gas comprising delivering oxygen, nitrogen, and/or air to the sample vessels during step (d).

63. The method of claim **59**, wherein step (d) is an anaerobic fermentation comprising delivering an inert gas to maintain anaerobic fermentation conditions in the sample vessels.

64. The method of claim **59**, wherein the sample vessels each have a volume between 50 and 200 ml.

65. The method of claim **59**, wherein the sample vessels have a volume between 80 and 100 ml.

66. The method of claim **59**, wherein each sample has a volume less than 200 ml.

67. The method of claim **59**, wherein each sample has a volume of less than 100 ml.

68. The method of claim **69**, comprising robotically transporting the sample vessels in the container frame.

69. The method of claim **59**, further comprising simultaneously transporting the plurality of sample vessels in the container frame to a processing station.

70. The method of claim **69**, wherein the processing station comprises a centrifuge, an aspirator, and/or a dispenser.

71. The method of claim **70**, wherein the sample container is compatible with the centrifuge.

72. The method of claim **70**, wherein the sample vessels are compatible with the centrifuge.

73. The method of claim **70**, further comprising removing the sample vessels from the container frame and introducing the sample vessels into the centrifuge.

74. The method of claim **70**, wherein the aspirator comprises an aspirator head which corresponds to the array of sample vessels within the container frame, the method further including operably attaching the aspirator head to the sample vessels and simultaneously aspirating the samples within the sample vessels.

75. The method of claim **70**, the method further dispensing one or more materials into the sample vessels.

76. The method of claim **70**, wherein the dispenser comprises a dispensing head corresponding to the array of sample vessels, the method further including operably attaching the dispenser head to the sample vessels and simultaneously dispensing one or more materials into the sample vessels.

77. The method of claim **59**, wherein the array comprises an 8 by 12 array.

78. The method of claim **59**, wherein the array comprises 96, 384, or 1536 sample vessels.

79. The method of claim **59**, further comprising positioning the sample vessels in the container frame in a water bath during the fermenting step in order to control the fermentation temperature.

80. A method of processing a plurality of fermentation samples, the method comprising:

(a) fermenting a plurality of fermentation samples in a plurality of sample vessels, resulting in a plurality of fermented samples;

(b) robotically transporting the sample vessels containing the fermented samples to a centrifuge head; and

(c) centrifuging the fermented samples in the same sample vessels in which the fermentation was performed.

81. The method of claim **80**, the method further including isolating a supernatant from the sample vessels after centrifuging the fermentation samples.

82. The method of claim **80**, wherein at least 4 sample vessels are robotically transported to the centrifuge head at the same time.

83. The method of claim **80**, wherein at least 10 sample vessels are robotically transported to the centrifuge head at the same time.

84. The method of claim **80**, wherein each sample vessel contains less than 100 mL of fermentation sample.

85. The method of claim **80**, wherein the plurality of sample vessels are held in an 8 by 12 array.